COURSE SYLLABUS
Current as of February 1, 2018

Applied Data Analysis and Interpretation in Agriculture and Natural Resources

Course No.: AEC 6932
Section No.: 256C
Instructor: Dr. Glenn D. Israel
Office: 218 Rolfs Hall
Term: Spring, 2018
Office Hours: by appointment
Location: 306 Rolfs
E-mail: gdisrael@ufl.edu
Time: Tuesday, at 10:40 a.m. – 12:05 p.m.
Thursday, at 10:40 a.m. – 12:05 p.m.
Telephone: 273-2586 (office)
Inform instructor about religious holidays

Inform instructor about religious holidays

Course Description: Concepts and methods drawn from the social sciences for analyzing data in the human dimensions of agricultural and natural resource issues.

Course Objectives: Upon completing the course, students should be able to identify a research question and conduct a process analyzing a data set using quantitative methods. Specifically, students should be able to:

1. Determine appropriate statistical techniques for a given research question and data set.
2. Conduct exploratory analyses to assess data quality and describe distributions of variables.
3. Implement data reduction strategies and assess measurement properties of constructs.
4. Conduct bi-variate analyses using tabular analysis, correlation and other methods.
5. Conduct multi-variate analyses using General Linear Model techniques (Manova, Mancova, Regression) or Log-Linear Models.
6. If appropriate, conduct an analysis using structural equation models or hierarchal linear models.
7. Prepare a report of the methods and results which is suitable for publication.

Text: There is no require text for the course. Instead students are expected to retrieve and read on-line journal articles listed below. In addition, each student should obtain a copy of SAS or SPSS statistical software (the instructor uses SAS and SPSS) for his or her personal computer.

Students may wish to purchase the following book as a supplemental reference for the course:


Preparation: Students should have completed STA 6126 and 6127 (or equivalent) and a research methods course. An additional course on regression also is helpful.
**Participation:** In addition to attending each class, you should read assigned articles in a timely manner. Given the nature of the course, students are expected to participate in discussions for all scheduled classes.

**Assignments:**
1. Proposed project for the semester. Provide title and one paragraph description of the research question and data to be used in the analysis.  
   50 pts
2. Meta-data report  
   50 pts
3. Imputation of missing data exercise. Select an imputation method, impute missing data and include syntax and output.  
   100 pts
4. Index construction exercise  
   50 pts
5. Descriptive analysis. Conduct appropriate descriptive analysis of variables in data set. Include syntax and output in an appendix. Draft table(s) for publication  
   100 pts
6. First draft of publication, including an appendix with output and syntax used in the analysis  
   100 pts
7. Regression/Analysis of Covariance exercise  
   50 pts
8. Logistic regression exercise  
   50 pts
9. Second draft of publication, including an appendix with output and syntax used in the analysis  
   100 pts
10. HLM exercise  
    50 pts
11. Student participation and oral report  
    100 pts
12. Final draft of publication, including an appendix with output and syntax used in the analysis  
    200 pts

**Grading:** Based on the project assignments and final report, the grade for the course will use the following scale:

- A = 930 - 1,000 pts.  
- A- = 900 - 929  
- B+ = 870 - 899  
- B = 830 - 869  
- B- = 800 - 829  
- C+ = 770 - 799  
- C = 730 - 769  
- C- = 700 - 729  
- D+ = 670 - 699  
- D = 630 - 669  
- E = 629 or fewer pts.

**Online course evaluation process:** Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at [https://evaluations.ufl.edu](https://evaluations.ufl.edu). Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available at [https://evaluations.ufl.edu/results/](https://evaluations.ufl.edu/results/).
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<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Readings for class</th>
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<tbody>
<tr>
<td>Jan. 9, 11</td>
<td>Introduction and Research question selection</td>
<td>1, 2</td>
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<td>Exploring data structures &amp; descriptive statistics, inc. nested data</td>
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<td>Jan. 16, 18</td>
<td>Assessing Bias in survey data</td>
<td>3 (Project abstract due)</td>
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<td>Using plots and graphs/Descriptive statistics</td>
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<td>Jan. 23, 25</td>
<td>Dealing with missing data: Imputation methods</td>
<td>4, 5, 6 (Meta-data report due 1/25)</td>
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<td>Jan. 30,</td>
<td>Measurement issues: index construction with Principle components;</td>
<td>(Imputation exercise due 2/1)</td>
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<td>Feb. 1</td>
<td>Indexes cont.: Factor analysis</td>
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<td>Feb. 6, 8</td>
<td>Tabular analysis</td>
<td>7</td>
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<td>Moderator/Mediator variables</td>
<td>8, 9 (Index exercise due 2/8)</td>
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<td>Feb. 13, 15</td>
<td>Survey weighting</td>
<td>(Table(s) with descriptive analysis due 2/15)</td>
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<td>Feb. 20, 23</td>
<td>No class – Israel to WERA-1010</td>
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<td>Feb. 27,</td>
<td>Regression</td>
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<td>Mar. 1</td>
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<td>Mar. 6, 8</td>
<td>No class – Spring break</td>
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<td>Mar. 13, 15</td>
<td>Dummy variables in regression</td>
<td>10 (1st draft of paper due)</td>
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<td>ANOVA &amp; MANCOVA</td>
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<td>Mar. 20, 22</td>
<td>Regression diagnostics; Collinearity assessment</td>
<td>11, 12</td>
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<td>Logistic regression</td>
<td>(Regression exercise due 3/22)</td>
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<td>Mar. 27, 29</td>
<td>Logistic regression (cont.)</td>
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<td>Apr. 3, 5</td>
<td>Ordinal &amp; multinomial logistic regression; Poisson regression</td>
<td>Logistic regression exercise due 4/5</td>
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<td>Student updates</td>
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<td>Apr. 10, 17</td>
<td>Effect size calculations</td>
<td>(2nd draft of paper due 4/17)</td>
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<td>Student updates</td>
<td>13, 14</td>
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<td>Hierarchal Linear Models (HLM): Two-level models</td>
<td>15</td>
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<td>Apr. 24</td>
<td>HLM: Three-level models, Growth models</td>
<td>16, 17 (HLM exercise due)</td>
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<td>Intro to Structural equation models (SEM)</td>
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<td>May 1</td>
<td>Final paper due</td>
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Reading Assignments:


(18) TBD on the topic of structural equation models

Additional References:


(21) Savvy Survey Series. Available at: http://edis.ifas.ufl.edu/topic_series_savvy_survey
Data sets available from the instructor for the Course Project (and related publications):

1. Student-supplied, instructor-approved data sets

2. Small Farms Survey data, 1989


3. Small Farms Survey data, 2008 (n=275)


5. Florida Horse Owner Survey, 2005 (n=615)


7. Florida Yards & Neighborhoods evaluations, 1999-2004, 2010-12 (n=400+; n=480+)


8. NELS:88 public use data, Base year – third follow-up (n~20,000)


9. ECLS-K public use data (Early childhood longitudinal study), Kindergarten-first grade


11. Climate Change in Florida, 2016-2017 (Qualtrics online panel, n=514; ABS mail survey, n=317)

Note: use of any data set must comply with University of Florida policies concerning research involving human subjects.

**Relevant Websites:**

Very useful web site with examples and syntax for multivariate analysis:

https://stats.idre.ucla.edu/
https://stats.idre.ucla.edu/spss/
https://stats.idre.ucla.edu/sas/

Statsoft Electronic Statistics Textbook
http://www.statsoft.com/textbook/stbasic.html

Web Pages that Perform Statistical Calculations
http://statpages.org/
Grades and Grade Points
For information on current UF policies for assigning grade points, see https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

Absences and Make-Up Work
Requirements for class attendance and make-up exams, assignments and other work are consistent with university policies that can be found at: https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx.

Academic Honesty
As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge: “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.” You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment."

It is assumed that you will complete all work independently in each course unless the instructor provides explicit permission for you to collaborate on course tasks (e.g. assignments, papers, quizzes, exams). Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct to appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For more information regarding the Student Honor Code, please see: http://www.dso.ufl.edu/SCCR/honorcodes/honorcode.php.

Software Use:
All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against university policies and rules, disciplinary action will be taken as appropriate.
**Campus Helping Resources**

**Health and Wellness**
U Matter, We Care: If you or a friend is in distress, please contact umatter@ufl.edu or 352 392-1575 so that a team member can reach out to the student.
Counseling and Wellness Center: [http://www.counseling.ufl.edu/cwc/Default.aspx](http://www.counseling.ufl.edu/cwc/Default.aspx), 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.
Sexual Assault Recovery Services (SARS) Student Health Care Center, 392-1161.
University Police Department, 392-1111 (or 9-1-1 for emergencies). [http://www.police.ufl.edu/](http://www.police.ufl.edu/)

**Academic Resources**
E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learningsupport@ufl.edu. [https://lss.at.ufl.edu/help.shtml](https://lss.at.ufl.edu/help.shtml).
Career Resource Center, Reitz Union, 392-1601.
Career assistance and counseling. [http://www.crc.ufl.edu/](http://www.crc.ufl.edu/) Library Support, [http://cms.uflib.ufl.edu/ask](http://cms.uflib.ufl.edu/ask). Various ways to receive assistance with respect to using the libraries or finding resources.
Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring. [http://teachingcenter.ufl.edu/](http://teachingcenter.ufl.edu/)
Student Complaints Campus: [https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf](https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf)

**Services for Students with Disabilities**
Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, [www.dso.ufl.edu/drc/](http://www.dso.ufl.edu/drc/)) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodations. Students with disabilities should follow this procedure as early as possible in the semester.